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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/754,027	01/08/2004	Sung-Koog Oh	5000-1-436	6075
33942	7590	05/06/2005	EXAMINER	
CHA & REITER, LLC 210 ROUTE 4 EAST STE 103 PARAMUS, NJ 07652			PAK, SUNG H	
			ART UNIT	PAPER NUMBER
			2874	

DATE MAILED: 05/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/754,027

Applicant(s)

OH ET AL.

Examiner

Sung H. Pak

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-37 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-37 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☒ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>1104, 1104.</u> | 6) <input type="checkbox"/> Other: ____.  |

## **DETAILED ACTION**

### ***Information Disclosure Statement***

Information disclosure statement filed 11/04/2004 and 11/05/2004 have been considered.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-15, 20-34 are rejected under 35 U.S.C. 102(e) as being anticipated by Hasegawa et al (US 6,718,105 B2).

Hasegawa discloses an optical device with all the limitations set forth in the claims, including: a cylindrical or rod-shaped substrate with a plurality of holes longitudinally formed therethrough in a photonic lattice structure (abstract, Fig. 1: optical fibers are rod/ cylinder shaped); a plurality of longitudinal material members having at least two different indices of refraction, the members being disposed in the holes (Fig. 1; column 3 lines 33-47); wherein distribution of index of refraction of the photonic crystal fiber and fiber preform is controlled by arrangement of the members (arranged in hexagonal or square lattice; column 3 lines 28-42; column 6 lines 22-30);

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wherein each of the members is formed in the shape of a rod, the rod being inserted in the corresponding hole ('6' Fig. 1);

wherein each of the holes and members is formed in the shape of a cylinder, the member being inserted in the corresponding hole ('6' Fig. 1);

wherein the index of refraction of the members monotonically decreases from the center of the fiber or preformed to the outer circumference (Table 2, example 1);

wherein the index of refraction of the members monotonically increases from the center of the fiber or preform to the outer circumference (Table 2, example 6);

wherein the index of refraction of the members monotonically either decreases and then increases or increases and then decreases from the center of the fiber or preform to the outer circumference (Table 2, examples 3-4);

wherein the substrate is made of material containing pure silica (column 3 lines 43-47);

wherein the substrate is made of a material containing silica and a dopant having a predetermined index of refraction (column 6 lines 10-21);

wherein the relative index of refraction of each of the members to pure silica is a predetermined percentage (column 6 lines 10-21);

wherein each of the members is formed in the shape of a cylinder having a diameter smaller than that of the cylindrical substrate (Fig. 1).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 16-19, 35-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hasegawa et al (US 6,718,105 B2) in view of Jakobsen et al (US 2004/0179796A1).

Hasegawa discloses an optical device with all the limitations set forth in the claims as discussed above, wherein plurality of holes are disposed in a single unitary fiber substrate. Although the substrate may have plurality of regions having different optical properties, Hasegawa does not explicitly teach the use of a separate outer substrate and separate inner substrate fitted in the outer substrate.

On the other hand, Jakobsen explicitly teaches the use of separate inner substrate being fitted in the outer substrate of the photonic bandgap fiber (paragraph 0147). Such arrangement is considered advantageous and desirable in the art because it allows for inner and outer portions of the resulting fiber to have distinct optical properties (such as index of refraction), which are clearly and precisely bound and defined along the boundaries. This would not be possible without the use of separate inner and outer

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substrate layers, since imparting different optical properties through dopant diffusion cannot achieve very precise and clearly cut border. Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the Hasegawa device to have a separate outer substrate and separate inner substrate fitted in the outer substrate.

### *Conclusion*

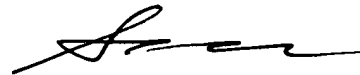
The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Sasaoka et al (US 6,661,954 B2), Libori et al (US 2005/0069269 A1), and Libori et al (US 2002/0061176 A1) disclose photonic crystal fibers having plurality of holes with differing refractive index values.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sung H. Pak whose telephone number is (571) 272-2353. The examiner can normally be reached on Monday- Friday, 9AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney Bovernick can be reached on (571)272-2344. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Sung H. Pak  
Patent Examiner  
Art Unit 2874

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